REMARKS

This paper is being provided in response to the Office Action mailed June 7, 2004, for the above-referenced application. In this response, Applicants have amended claims 1 and 4 and added new claim 5 to clarify that which Applicants consider to be the invention. Further, Applicants have amended the drawings for purposes of clarification. Applicants respectfully submit that the amendments to the claims are fully supported by the originally-filed specification and that the amendments to the drawings do not add new subject matter.

The objection to the drawings has been addressed by amendments contained herein according to the guidelines as set forth in the Office Action. Accordingly, Applicants respectfully request that this objection be reconsidered and withdrawn.

The rejection of claims 1-4 under 35 U.S.C. 112, second paragraph, as being indefinite has been addressed by amendments contained herein according to the guidelines as set forth in the Office Action. Accordingly, Applicants respectfully request that this rejection be reconsidered and withdrawn.

The rejection of claims 1, 3 and 4 under 35 U.S.C. 102(b) as being anticipated by JP 10-94237 to Masami (hereinafter "Masami") is hereby traversed and reconsideration is respectfully requested. Further, the rejection of claim 2 under 35 U.S.C. 103(a) as being unpatentable over Masami is hereby traversed and reconsideration is respectfully requested.

Independent claim 1, as amended herein, recites a low-profile stepping motor. A first stator includes a first upper stator yoke having a plurality of pole teeth formed along a semicircular inner circumference thereof. A first lower stator yoke has a plurality of pole teeth formed along a semicircular inner circumference thereof, the plurality of pole teeth meshing with the pole teeth of the first upper stator yoke. A first coil unit is fixedly sandwiched between the first upper and lower stator yokes. A second stator unit includes a second upper stator yoke punched out as one piece integrally with the first upper stator yoke so as to form an upper twin-stator yoke polate and having a plurality of pole teeth formed along a semicircular inner circumference thereof. A second lower stator yoke is punched out as one piece integrally with the first lower stator yoke so as to form a lower twin-stator yoke plate and having a plurality of pole teeth formed along a semicircular circumference thereof, the plurality of pole teeth meshing with the pole teeth of the second upper stator yoke. A second coil unit is fixedly sandwiched between the second upper and lower stator yokes and arranged horizontally flush with the first coil unit. One of the upper twin-stator yoke plate and the lower twin-stator yoke plate is structured such that one half of its pole teeth partitioned in half by a predetermined datum line and open spaces each residing between two adjacent pole teeth of the other half are positioned symmetrically about the predetermined datum line. A resin plate is formed simultaneously with a resin which is filled between the pole teeth of the first and second stator units. A rotor assembly including a cylindrical magnet is rotatably disposed in a circular open space defined by the pole teeth of the first and second stator units. Claims 2-5 depend from independent claim 1.

The Masami reference discloses a stepping motor including upper and lower yoke members Y and Z and having coupling members Y1 and Z1, Z2.

Applicants' independent claim, as amended herein, recites at least the features that in a low profile stepping motor one of the upper twin-stator yoke plate and the lower twin-stator yoke plate is structured such that one half of its pole teeth partitioned in half by a predetermined datum line and open spaces each residing between two adjacent pole teeth of the other half are positioned symmetrically about the predetermined datum line. Further, Applicants' recite that the motor includes a resin plate formed simultaneously with a resin which is filled between the pole teeth of the first and second stator units. Because one half of its pole teeth partitioned in half by a predetermined datum line and open spaces residing between two adjacent pole teeth of the other half are positioned symmetrically about the predetermined datum line, one twin-stator yoke plate can be used in common to the other twin stator yoke plate. (See, for example, Figures 2 and 4a and page 12, line 19 to page 13, line 19 of the present specification.) Further, the resin plate is formed simultaneously when resin material is filled in a gap space between the pole teeth. Therefore, components and manufacturing cost can be reduced and a dimension in an axial direction can be reduced.

Applicants submit that Masami does not teach or fairly suggest at least the above noted features as claimed by Applicants. Masami's stepped motor arguably does not include an arrangement of the pole teeth symmetrically about a predetermined datum line in the manner as claimed by Applicants. Further, Masami does not disclose a stepping motor in which one twin-stator yoke plate that can be used in common to the other twin-stator yoke plate. Additionally, Masami does not disclose a resin plate as recited by Applicants. Accordingly, in view of the above, Applicants respectfully request that these rejections be reconsidered and withdrawn.

Finally, the provisional obviousness-type double patenting rejection over claim 1 of co-pending Application No. 10/672,263 in view of Masami is hereby traversed and reconsideration is respectfully requested.

As noted in the Office Action, Applicants submit that claim 1 of co-pending Application No. 10/672,263 does not recite at least the features that in a low profile stepping motor one of the upper twin-stator yoke plate and the lower twin-stator yoke plate is structured such that one half of its pole teeth partitioned in half by a predetermined datum line and open spaces each residing between two adjacent pole teeth of the other half are positioned symmetrically about the predetermined datum line, nor that the motor includes a resin plate formed simultaneously with a resin which is filled between the pole teeth of the first and second stator units.

The Office Action asserts that Masami teaches a low profile stepping motor having the arrangement of the pole teeth symmetrically about the predetermined datum line (Figs. 1-2) for the purpose of enabling the motor to be configured with small low profiled with reduction of manufacture parts while maintaining efficient performance thereof. However, as noted above, Masami does not teach a low profiled stepping motor having the arrangement of the pole teeth symmetrically about the predetermined datum line as recited by the present claimed invention. Further, Masami does not disclose a resin plate as claimed by Applicants.

Accordingly, in view of the above, Applicants respectfully request that the provisional obviousness-type rejection be reconsidered and withdrawn.

Further, Applicant has added new dependent claim 5 and respectfully submits that this claim is patentable over the prior art of record.

Based on the above, Applicants respectfully request that the Examiner reconsider and withdraw all outstanding rejections and objections. Favorable consideration and allowance are earnestly solicited. Should there be any questions after reviewing this paper, the Examiner is invited to contact the undersigned at 617-248-4038.

Respectfully submitted,
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AMENDMENTS TO THE DRAWINGS:

Replacement Drawing Sheet 1 is attached hereto as an appendix containing a revised Figure 1 in which the legend "Prior Art" has been added as requested in the Office Action. Applicants respectfully submit that no new matter is added by this amendment.